



GIS as a Tool for Emergency Management

Michelle Tilley Oblinsky
Emergency Planner / GIS Coordinator
City of Chesapeake, VA

Who Is Here Today?



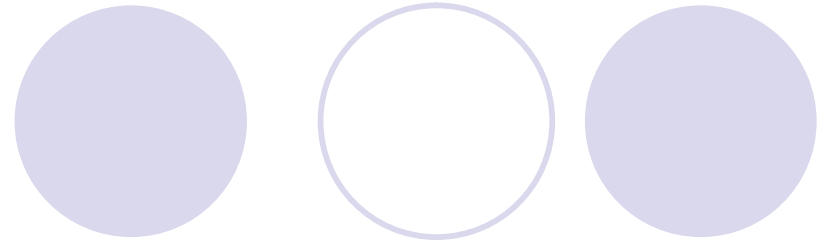
- GIS Managers / Staff?
- Emergency Managers?



Purpose

- Provide Background Information and Set the Stage for Today's Presentations
- Presentation Source:
 - ESRI White Paper: GIS for Emergency Management, 1999
 - Chesapeake's Experience

What is GIS?



- Definition:

- An organized collection of computer hardware, software, (geographic) data, and personnel designed to efficiently capture, store, update, manipulate, analyze, and display all forms of geographically referenced information. – ESRI
- Way to visualize tabular information

What is Emergency Management?

- Definition:

- Organized Analysis, Decision-Making, and Assignment of available resources to mitigate, prepare for, respond to and recover from the effects of ALL hazards

- Goals:

- Save Lives
- Prevent Injury
- Protect Property & Environment





Five Phases of Emergency Management


- **Mitigation** - Taking sustained action to reduce or eliminate long-term risk to people and property from hazards and their effects
- **Prevention** – Actions taken to avoid an incident or to intervene and stop an incident from occurring
- **Preparedness** - Plans and preparations made to save lives and facilitate response and recovery operations



Five Phases of Emergency Management


- **Response** - Begins when an emergency event is imminent or immediately after an event occurs
- **Recovery** - Rebuilding communities so that individuals, businesses, and governments can function on their own, return to normal life and protect against future hazards

What can GIS do for Emergency Management?



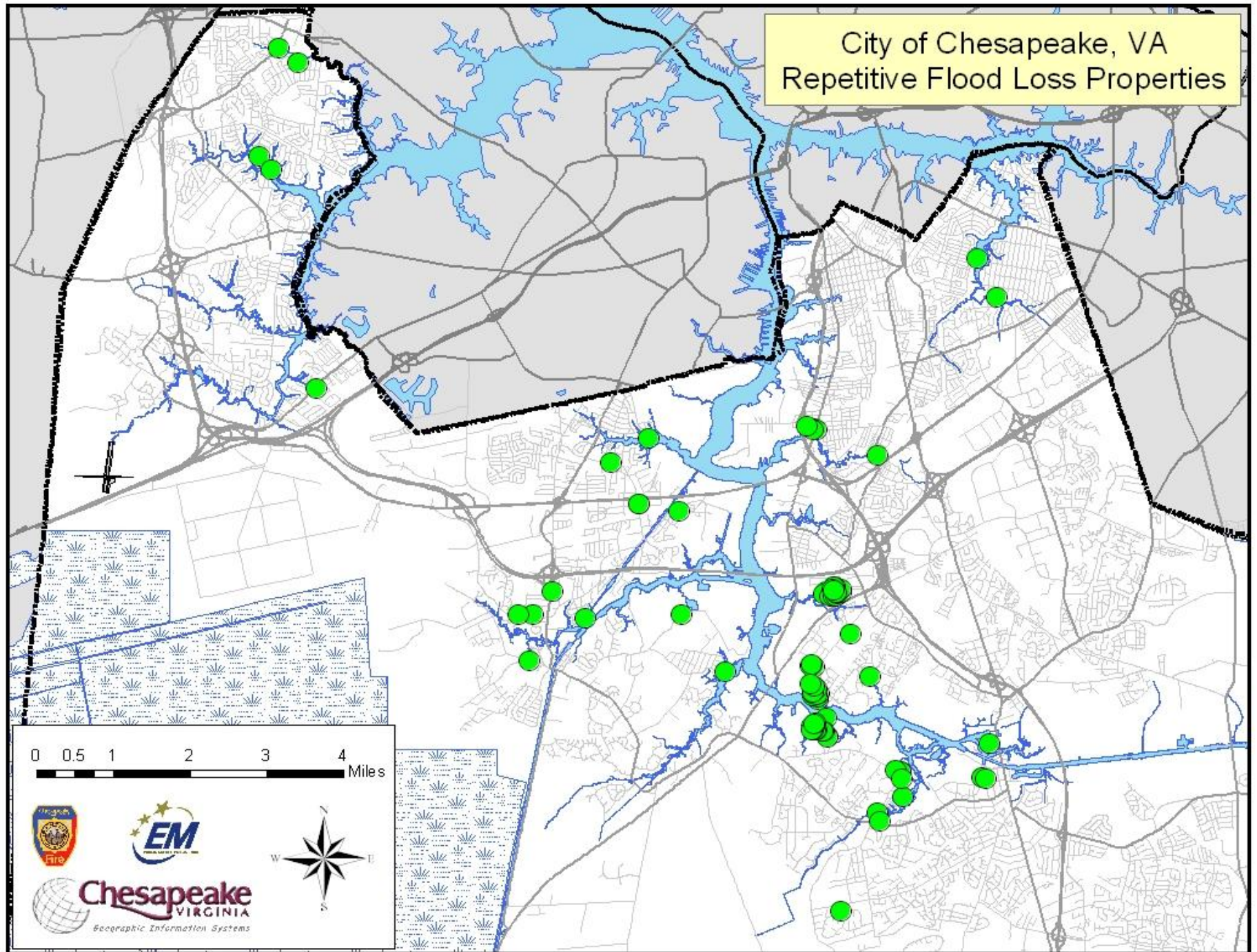
- ALL phases depend on data from a variety of sources
- Data CRITICAL in the Response Phase

What can GIS do for Emergency Management?

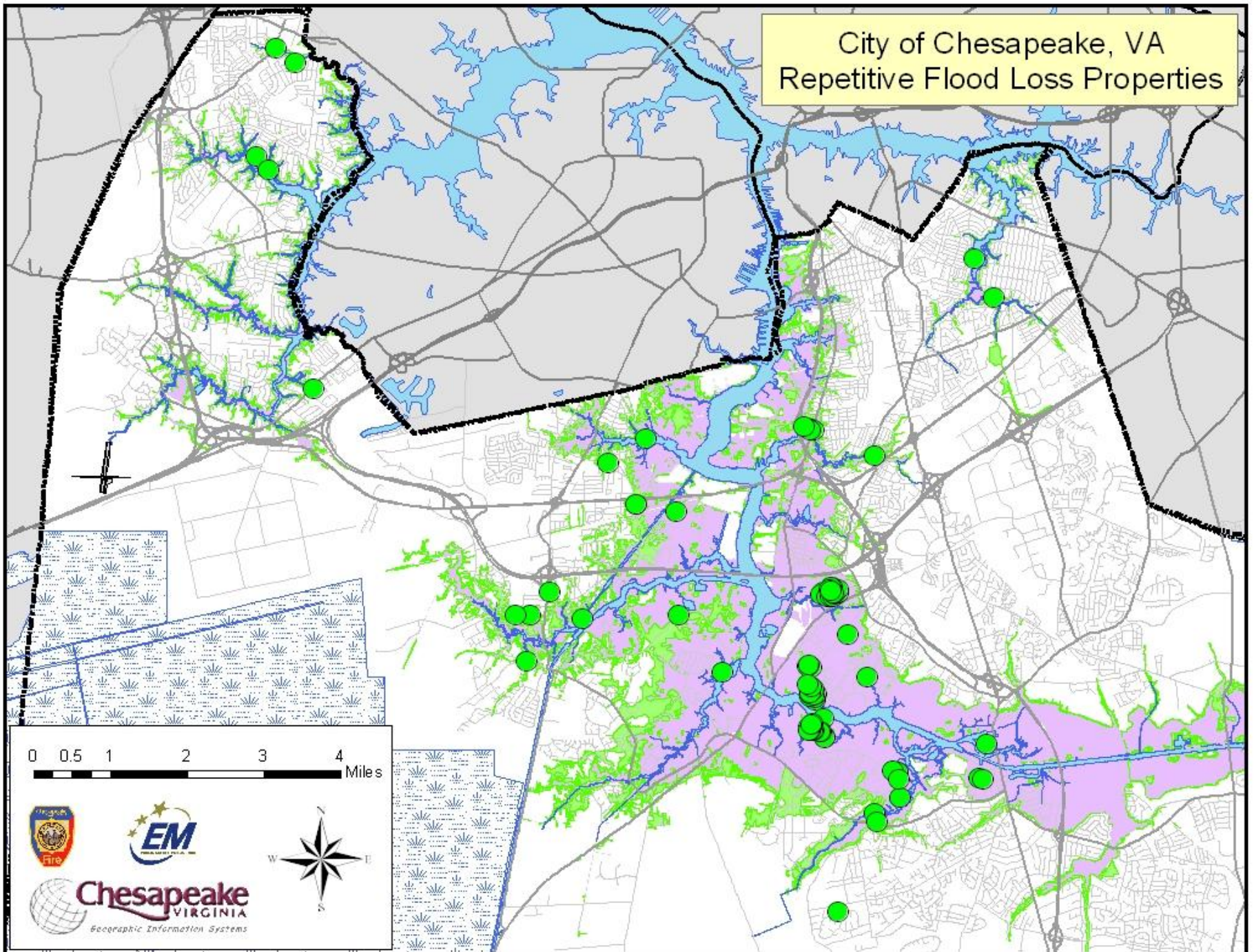


- Mitigation & Preparedness
 - Identify Repetitive Flood Loss Properties

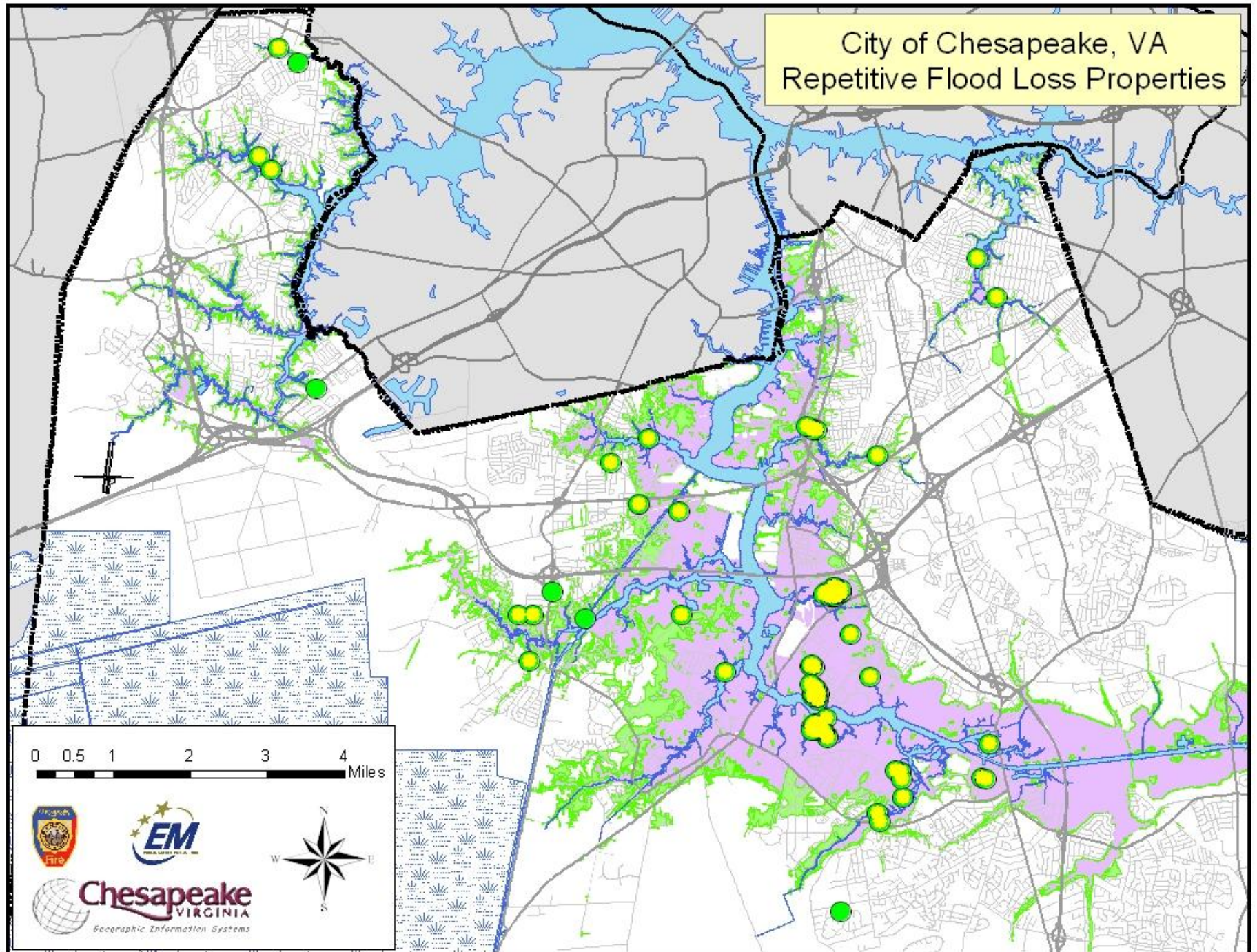
City of Chesapeake, VA
Repetitive Flood Loss Properties



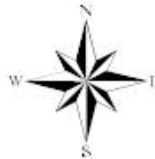
City of Chesapeake, VA
Repetitive Flood Loss Properties




City of Chesapeake, VA
Repetitive Flood Loss Properties



0 0.5 1 2 3 4 Miles




What can GIS do for Emergency Management?



- Preparedness / Planning

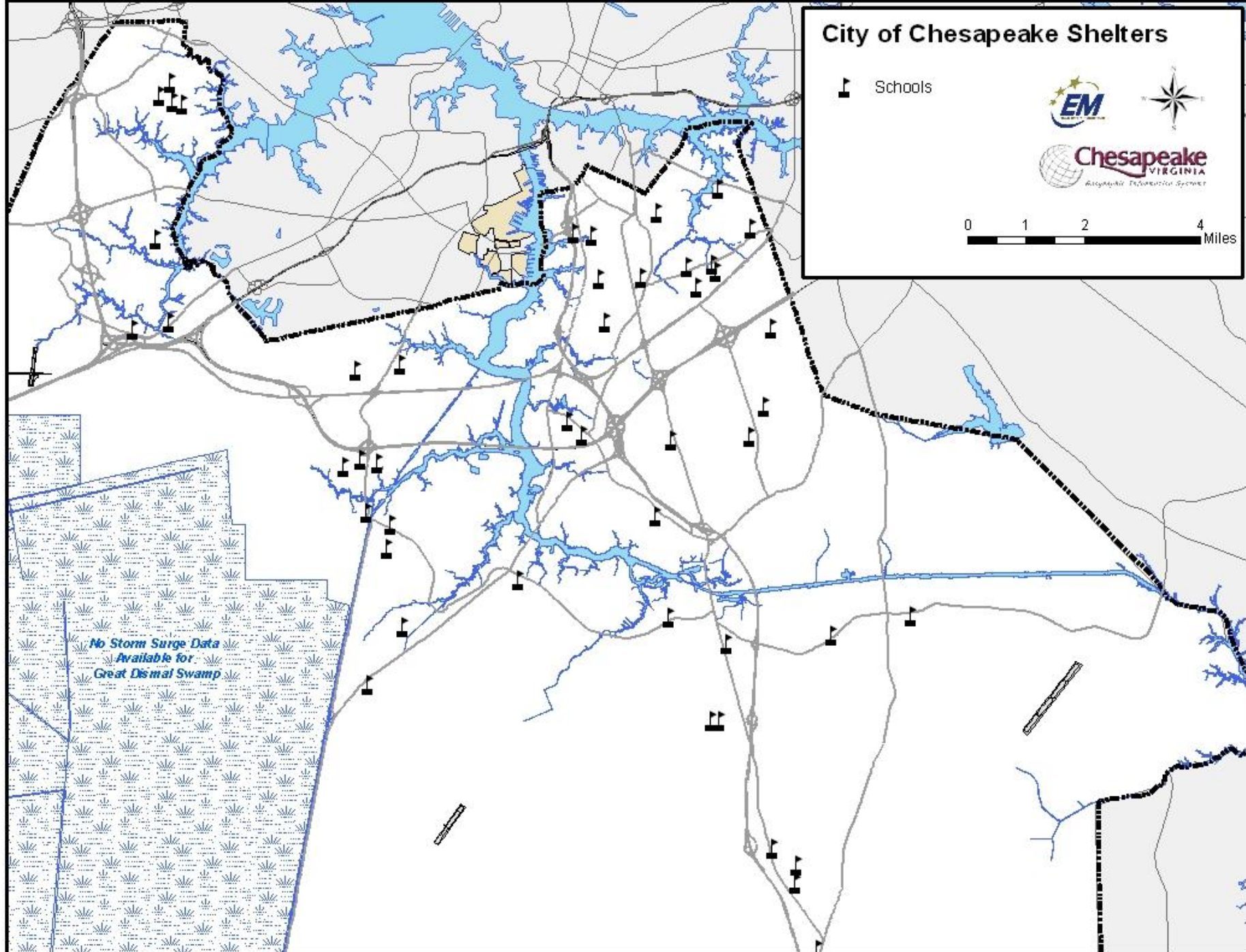
City of Chesapeake Shelters

 Schools




0 1 2 4 Miles

No Storm Surge Data
Available for
Great Dismal Swamp



City of Chesapeake Shelters

 Schools

Storm Surge

 CAT 1

 CAT 2

 CAT 3


 CAT 4



0 1 2 4 Miles

No Storm Surge Data
Available for
Great Dismal Swamp

City of Chesapeake Shelters

 Schools

Storm Surge

 CAT 1

 CAT 2

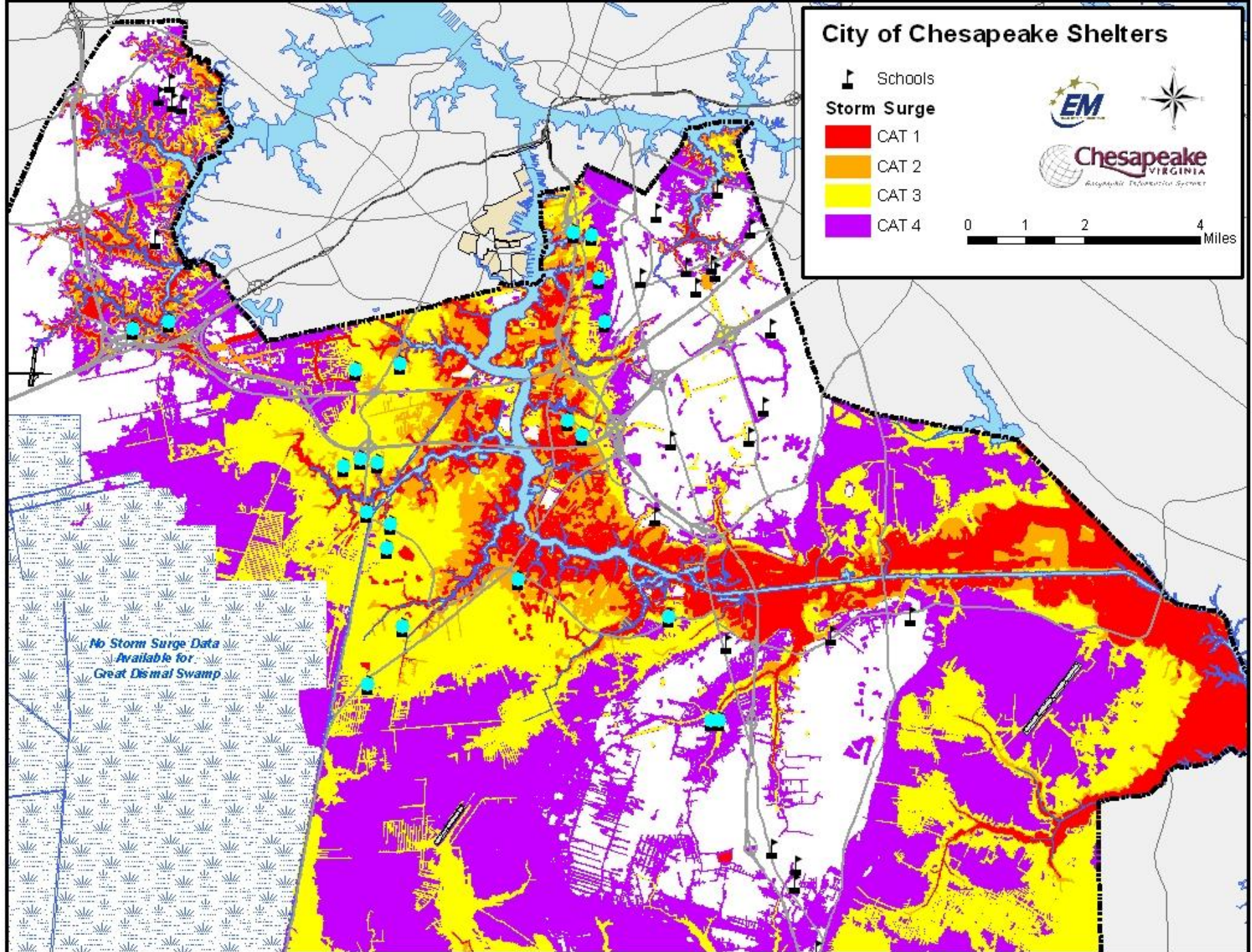
 CAT 3

 CAT 4




0 1 2 4 Miles

No Storm Surge Data
Available for
Great Dismal Swamp



City of Chesapeake Shelters

 Schools

Storm Surge

 CAT 1

 CAT 2

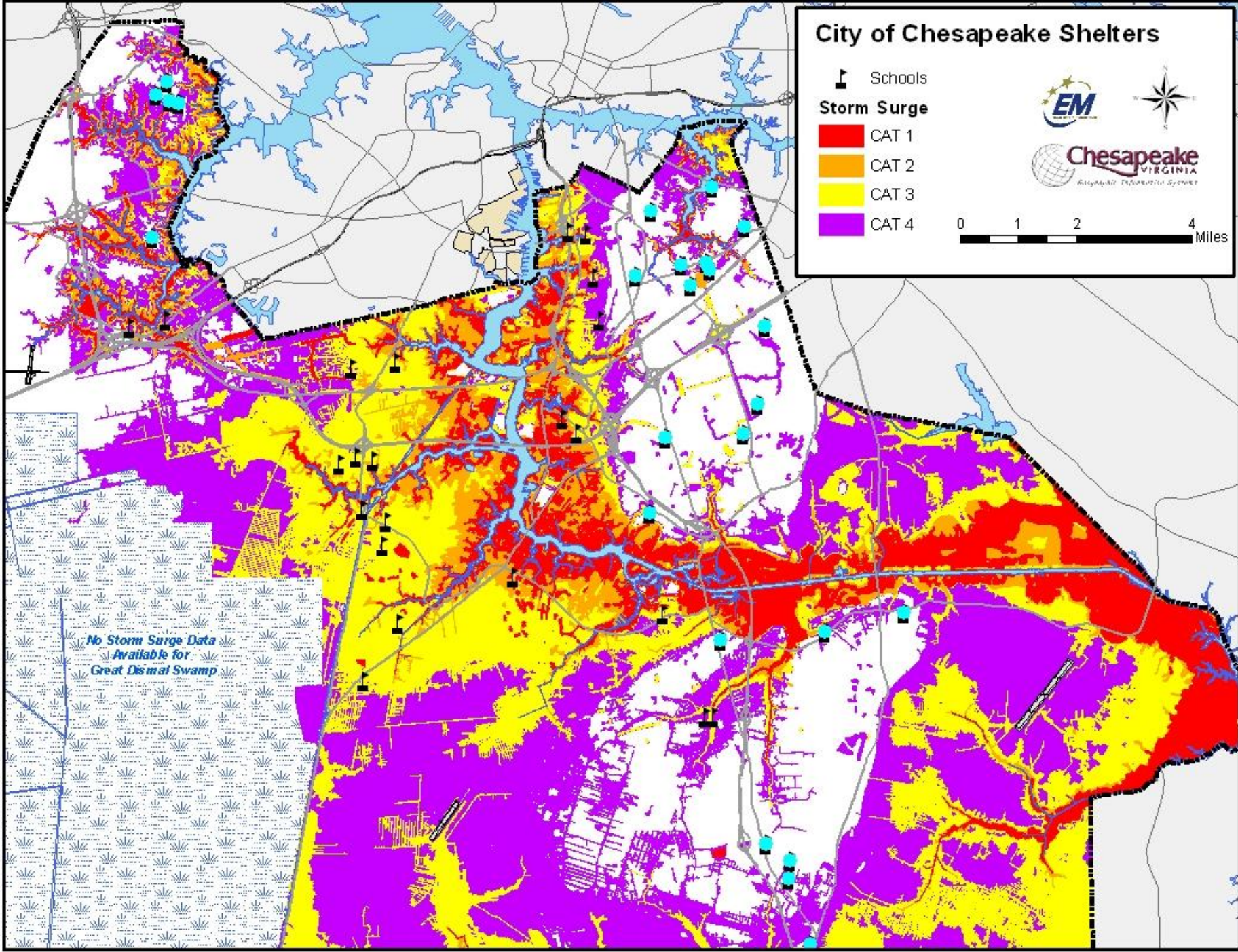
 CAT 3

 CAT 4



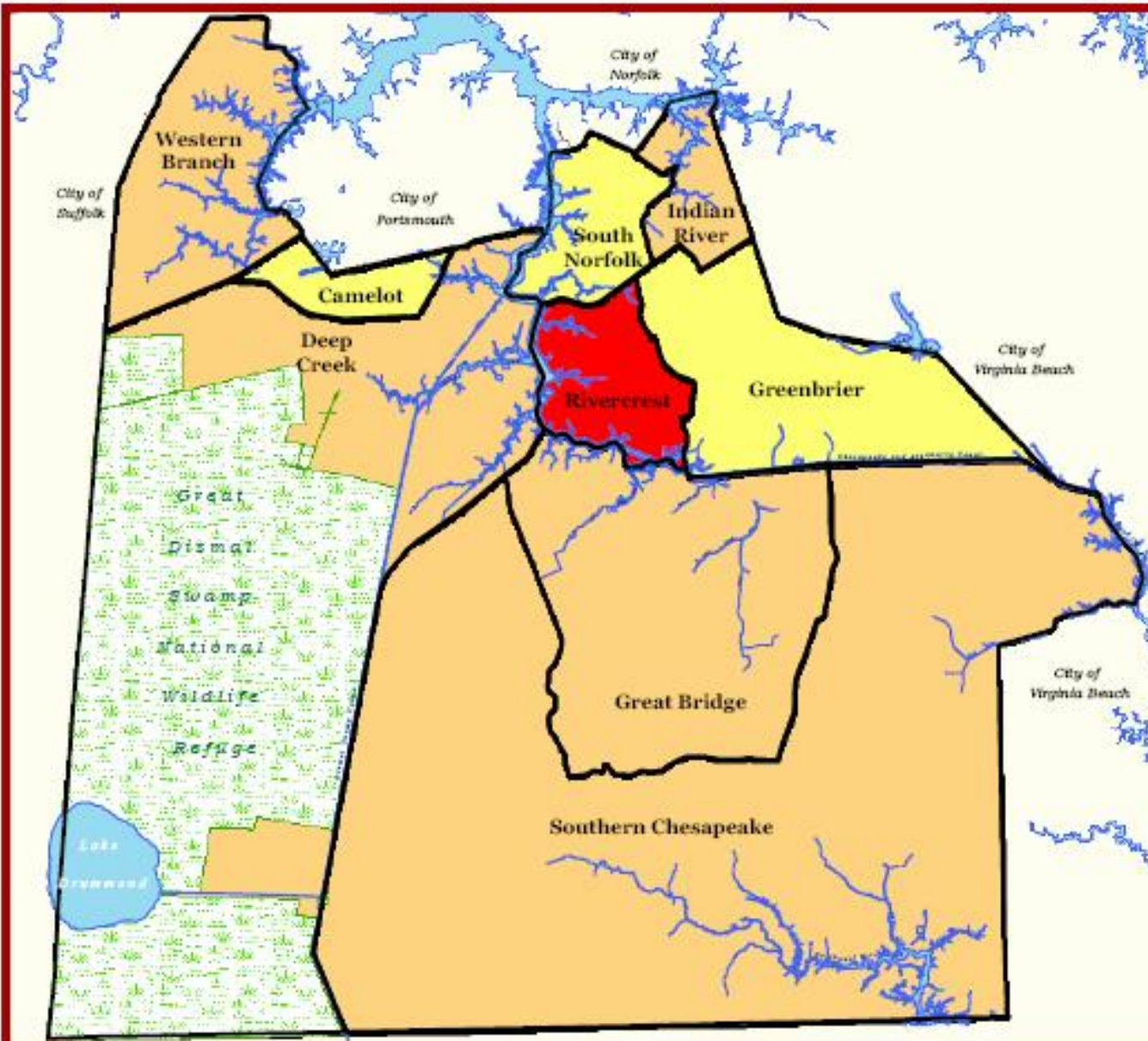
0 1 2 4 Miles

No Storm Surge Data
Available for
Great Dismal Swamp



What can GIS do for Emergency Management?

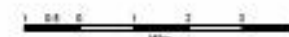
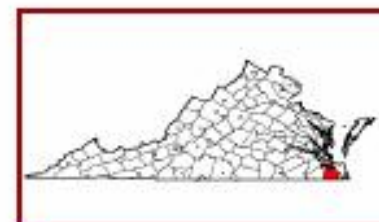
- Mitigation / Planning
 - Natural Event Mitigation Plan Update
 - Determine Flood Vulnerability



Chesapeake Residential Properties Flood Index

Residential Properties

- LOW
- MEDIUM
- HIGH
- Waterways
- Great Dismal Swamp

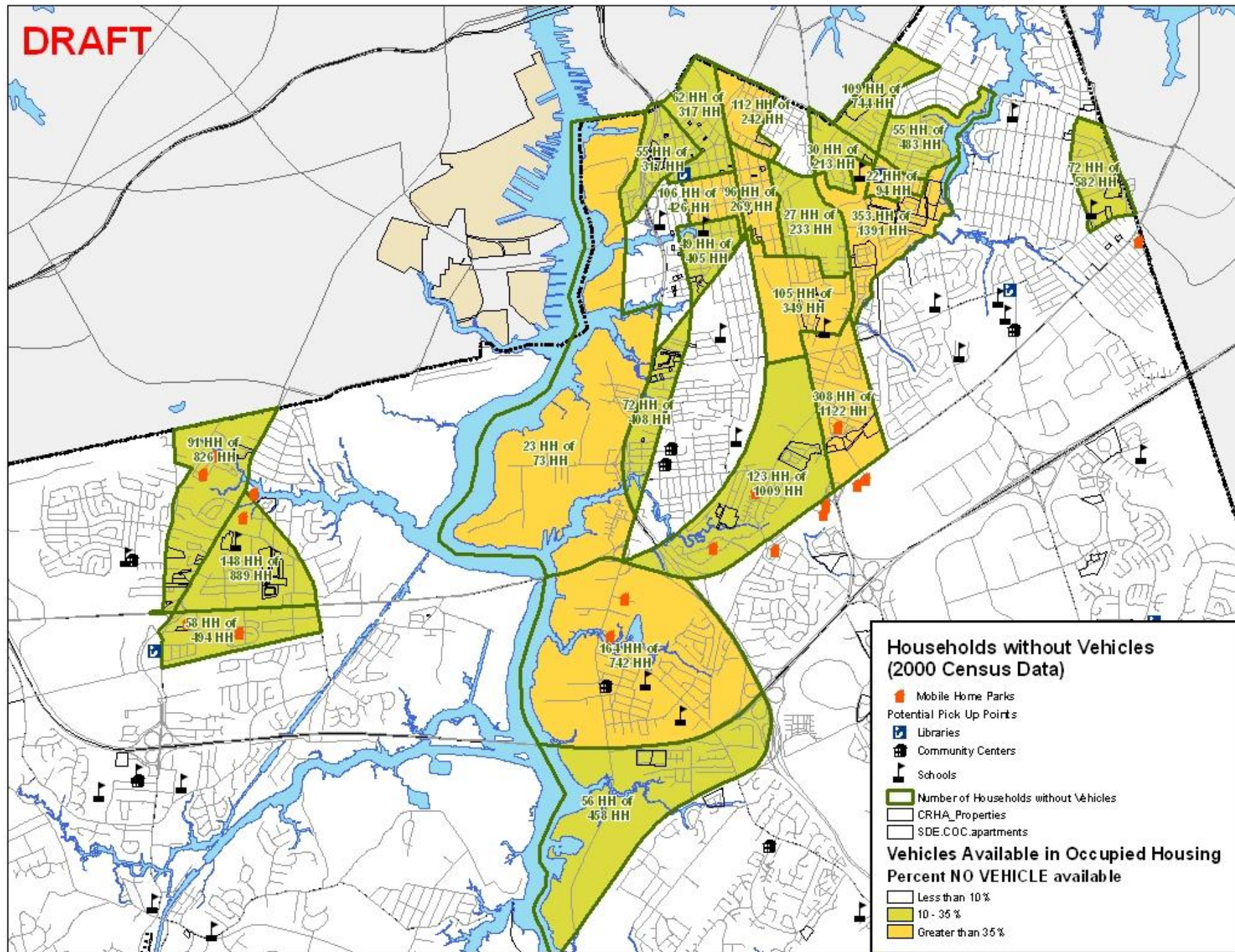


What can GIS do for Emergency Management?


- Planning for Response

- Evacuation of those without transportation
- Determine closest City Facilities to be used as “Pick up Points”
- Planning still in draft form

DRAFT



What can GIS do for Emergency Management?



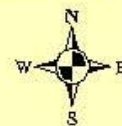
- Planning for Response

- Chesapeake Health Department with mapping for Cities Readiness Initiative

City of Chesapeake CRI Dispensing Districts

Legend

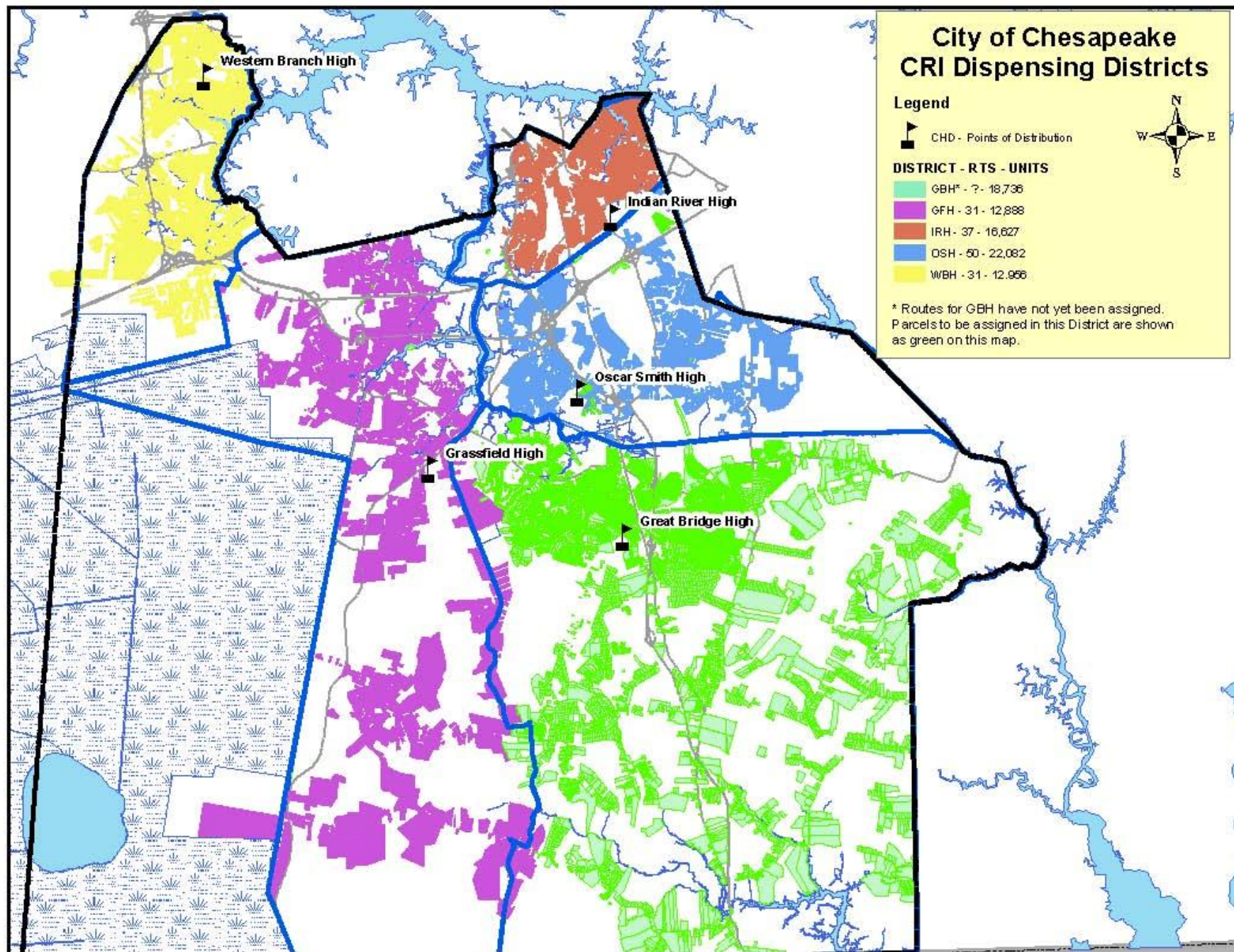
CHD - Points of Distribution




DISTRICT - RTS - UNITS

GBH*	- ? -	18,736
GFH	- 31 -	12,888
IRH	- 37 -	16,627
OSH	- 50 -	22,082
WBH	- 31 -	12,966

* Routes for GBH have not yet been assigned.
Parcels to be assigned in this District are shown
as green on this map.



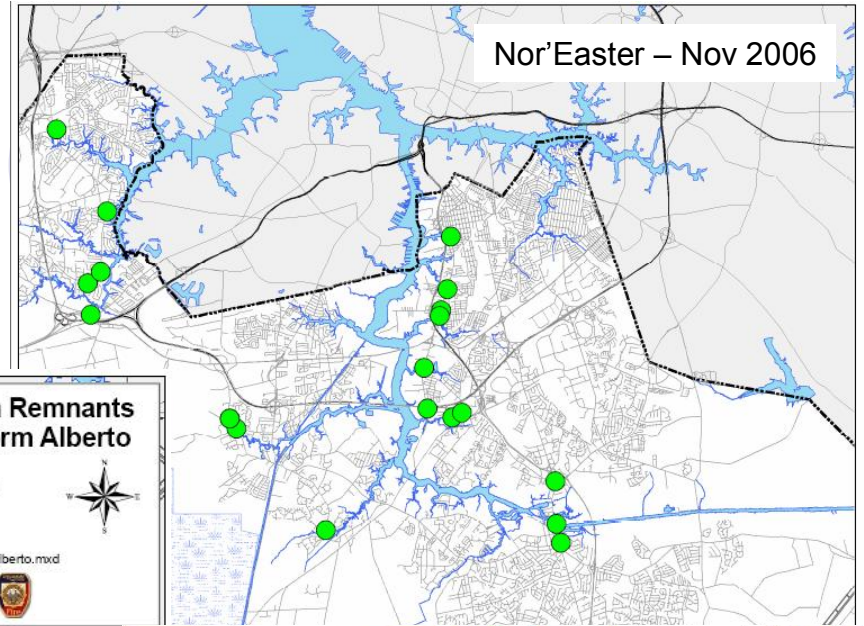
What can GIS do for Emergency Management?



- Response
 - Mapping Flood Areas

Map Flood Areas

Nor'Easter – Nov 2006



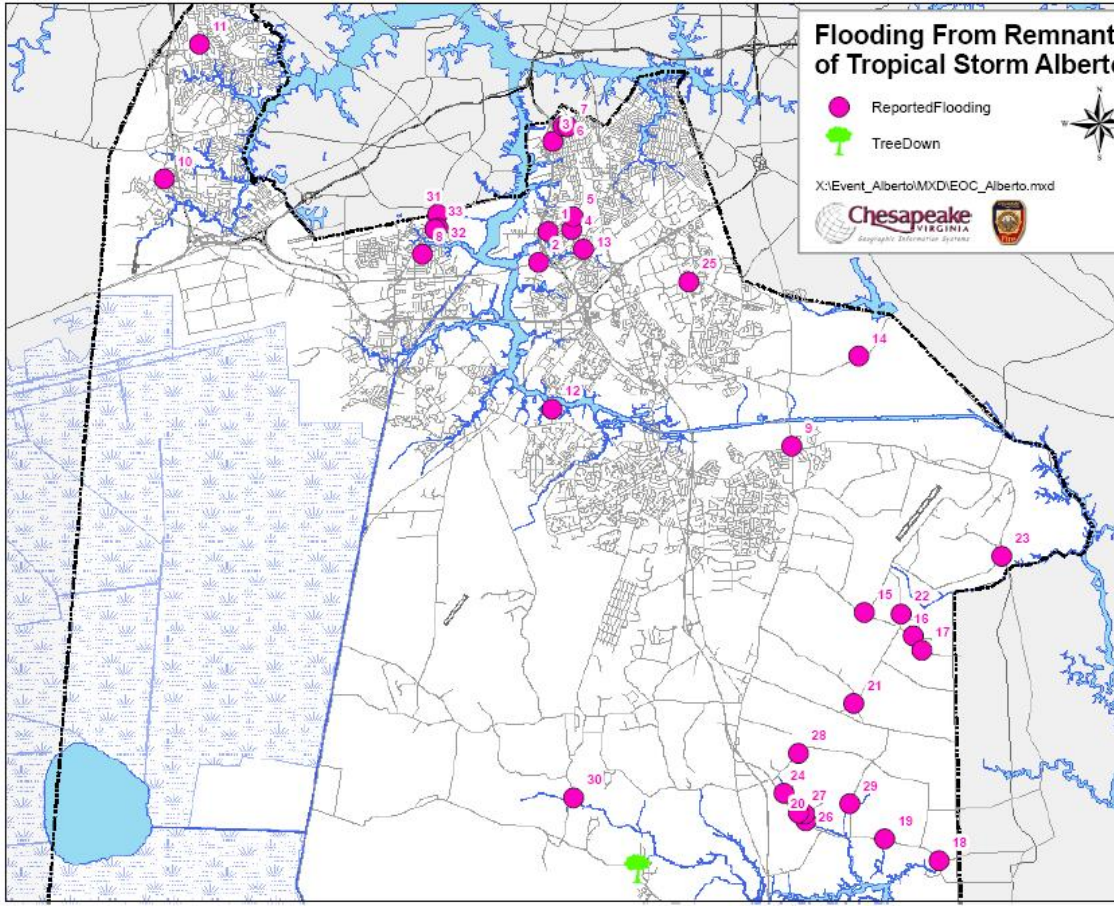
Flooding From Remnants of Tropical Storm Alberto

Reported Flooding

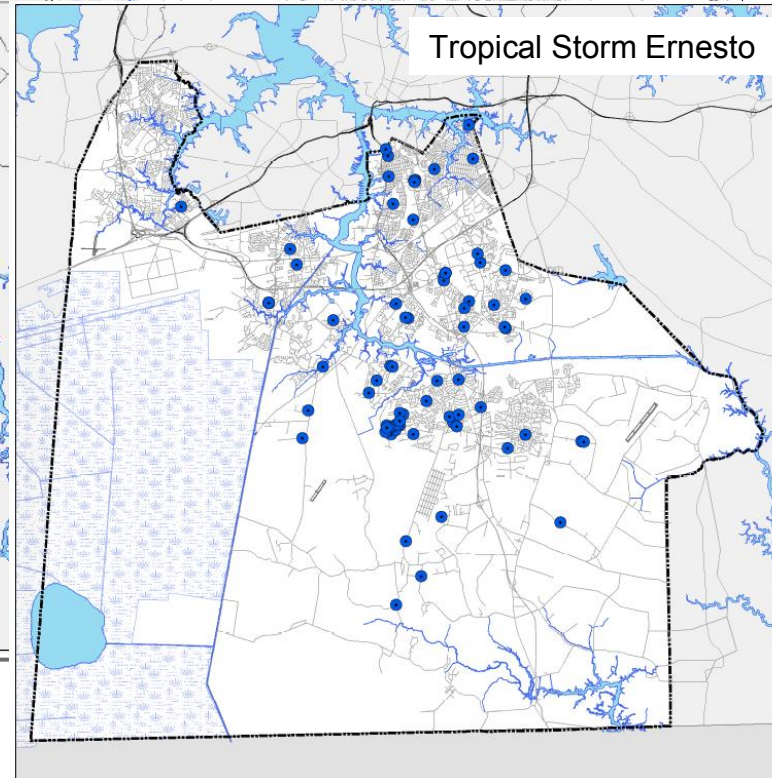
Tree Down

X:\Event_Alberto\MXD\EOC_Alberto.mxd

Chesapeake VIRGINIA
Geographic Information Systems



Tropical Storm Ernesto



What can GIS do for Emergency Management?

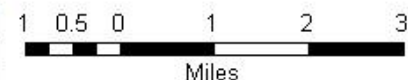
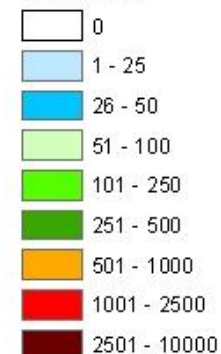
- Short Term Recovery
 - Overlay Power Outages with Facilities

City of Chesapeake Power Outages with Senior Facilities

 Senior Housing Facilities

Power Outages 15Feb 1600

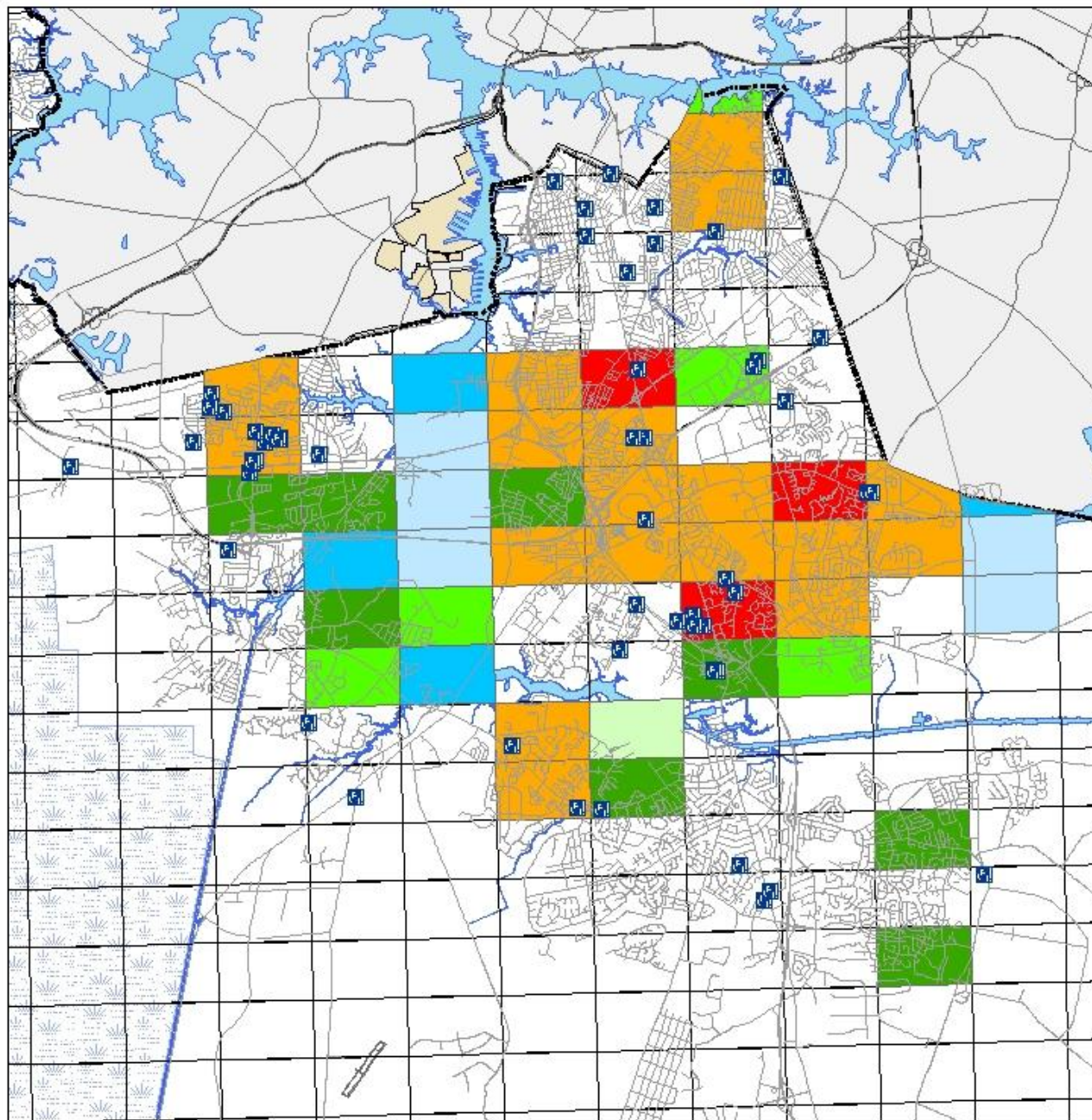
OUTAGES



Every effort has been made to ensure the accuracy and timeliness of the information depicted on this map. However, it is not possible to create, maintain or portray these data with 100% accuracy.

For this reason, the user is strongly encouraged to exercise prudence and employ all available resources including personal knowledge when using this map.

X:\Event_Feb06\MapDocs\
EOC_SrHomNoPwr_08Feb_1600.mxd

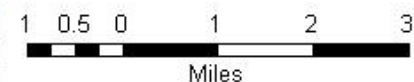
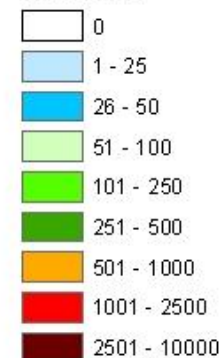


City of Chesapeake Power Outages with Senior Facilities

 Senior Housing Facilities

Power Outages 15Feb 1600

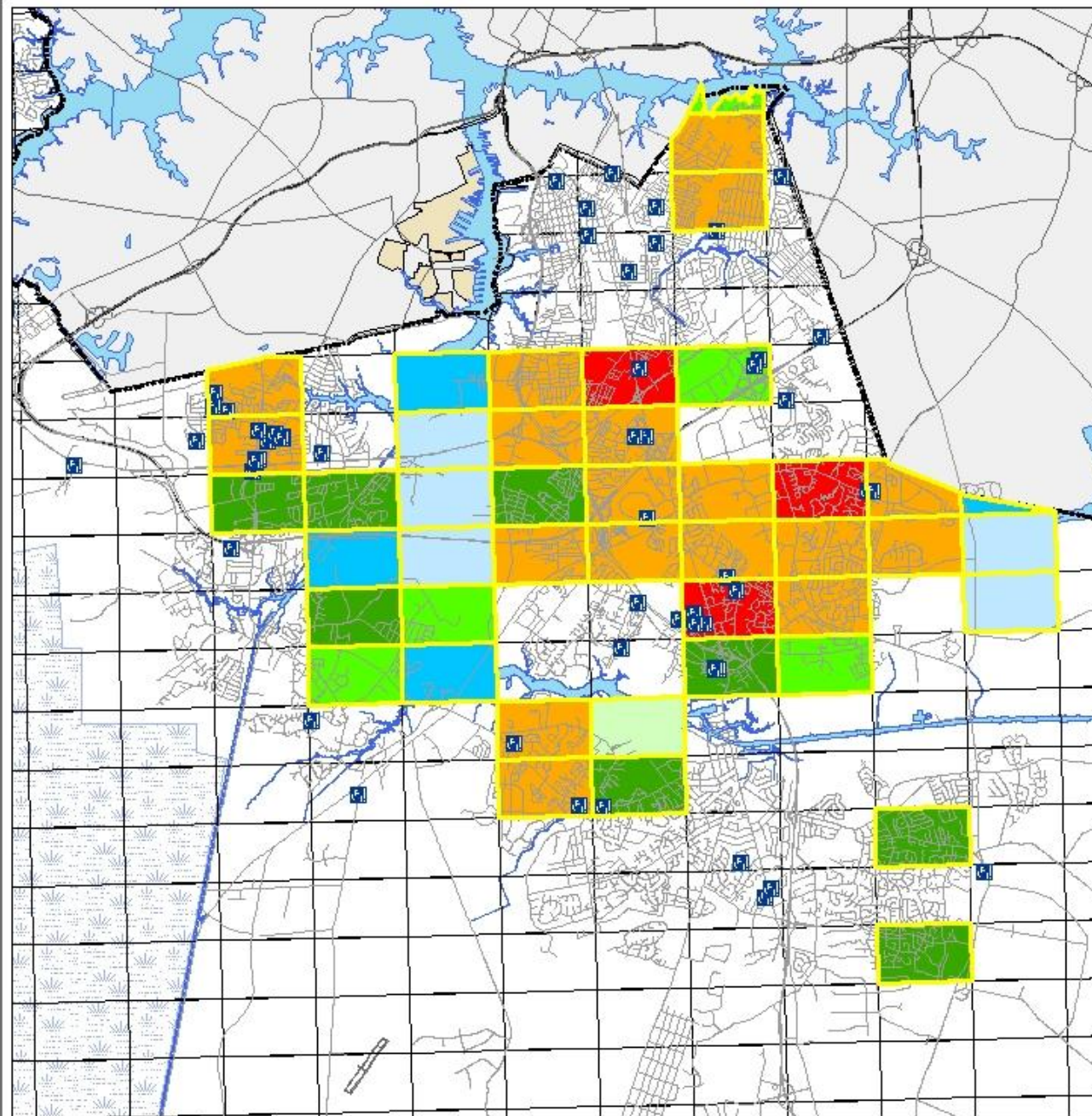
OUTAGES



Every effort has been made to ensure the accuracy and timeliness of the information depicted on this map. However, it is not possible to create, maintain or portray these data with 100% accuracy.

For this reason, the user is strongly encouraged to exercise prudence and employ all available resources including personal knowledge when using this map.

X:\Event_Feb06\MapDocs\
EOC_SrHomNoPwr_08Feb_1600.mxd

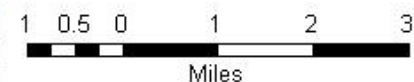
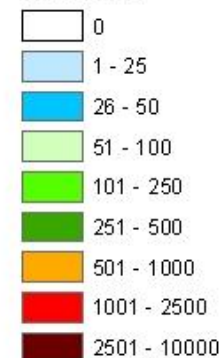


City of Chesapeake Power Outages with Senior Facilities

Senior Housing Facilities

Power Outages 15Feb 1600

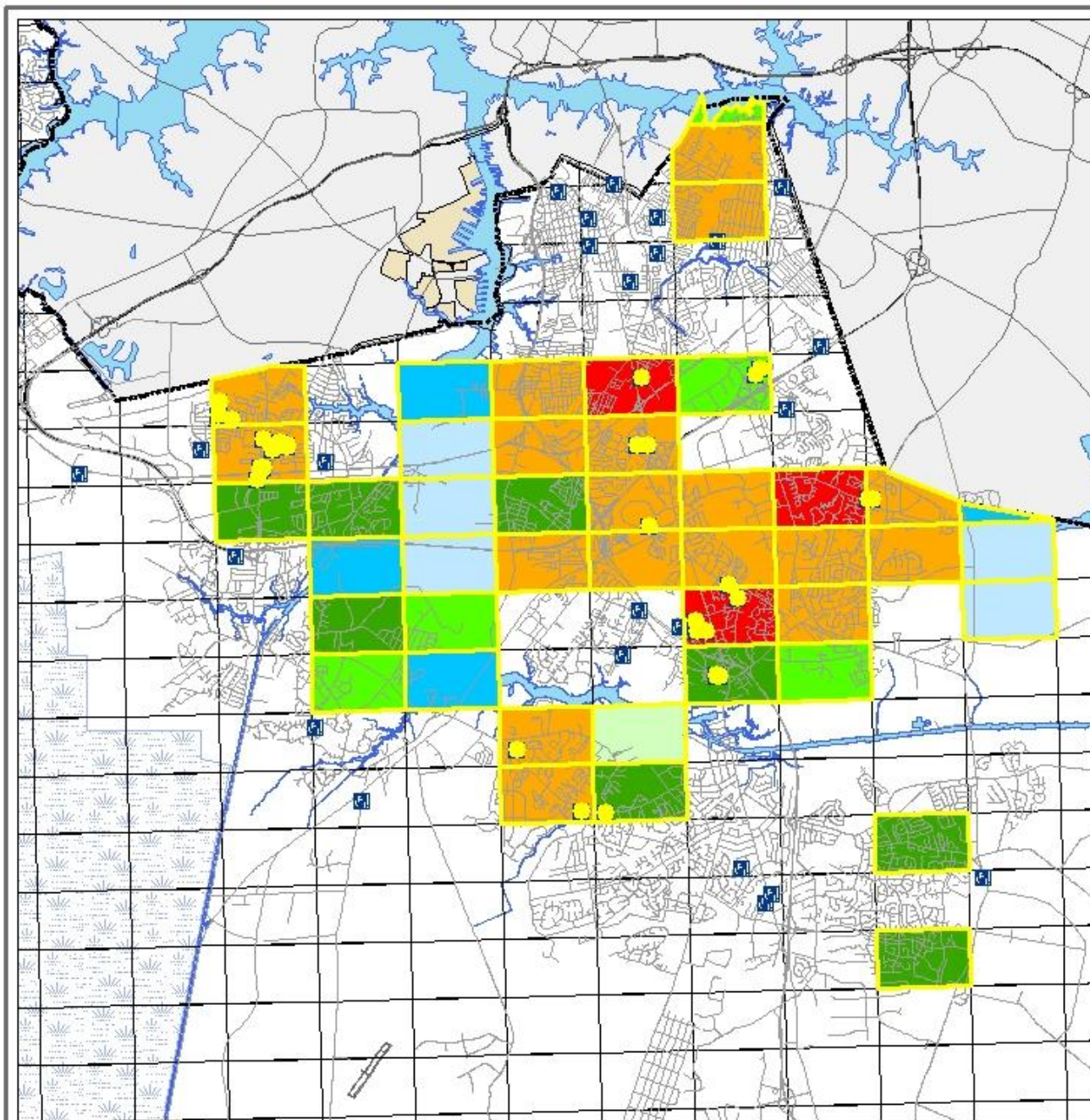
OUTAGES



Every effort has been made to ensure the accuracy and timeliness of the information depicted on this map. However, it is not possible to create, maintain or portray these data with 100% accuracy.

For this reason, the user is strongly encouraged to exercise prudence and employ all available resources including personal knowledge when using this map.

X:\Event_Feb06\MapDocs\
EOC_SrHomNoPwr_08Feb_1600.mxd



What can GIS do for Emergency Management?

- Summary

- GIS allows needs to be identified prior to an incident
- GIS information can be used in training as well as real-life
- GIS can take some of the surprise out of emergencies